Terrorism and PTSD: a historical review

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Terror is a psychological state. But historically, most studies of terrorism focused on its societal purpose and structural impacts rather than mental health effects. That emphasis began to change shortly before 9/11. A vast expansion of research into posttraumatic stress disorder (PTSD) accompanied revisions to the classification of mental disorders. The influence of terrorist incidents – including indirectly – on those now deemed vulnerable, was actively sought. Yet, a review of over 400 research articles (mostly published after 9/11) on the relationship between terrorism and mental health points to a significant, if largely overlooked, conclusion: that terrorism isn't terrorising – at least not to any degree giving rise to PTSD levels greater than expected from other traumatic events. This is surprising given the emphasis on the psychological impact of terrorism in political discourse, media commentary, contemporary culture and academic inquiry. Authorities may prefer to encourage an interpretation of terrorist incidents that highlights fortitude and courage over psychological vulnerability.

Search strategy and selection criteria
We conducted a search of the PsycINFO bibliographic database from inception to May 2017 for sources including both of the terms 'terrorism' and 'mental health' in their title or abstracts. The search yielded 441 journal articles and a book section. Our interest was in evidence concerning the relationship between mental health and terrorism, as well as broader discussion and theory pertaining to this relationship. After a review of the abstracts, 104 references were excluded because they were considered peripheral to our purpose, (e.g. the mental health of migrants fleeing terrorism). All of the remainder (including 21 only available as titles and a further 98 with only abstracts), were read. After excluding an organisational handbook and a document available only as a photocopy, we were left with a core group of 217 complete and searchable pdf documents. These were augmented a little by snowballing from their references, as well as through other literature known to us and considered relevant to the task. In addition, a PubMed search conducted in May 2018 and adopting the same methodology, yielded 213 hits. When cross-matched against the original list this showed just 38 new papers. Discarding the less relevant and those by authors already on our list, only a handful of these provided any fresh evidence for our narrative review. All lists are available from the authors.

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Contributors
BD: Lead author, lead reviewer, lead in data interpretation.
DW: Second author (commenting on drafts and adding some material), conducted literature search, contributed to planning the structure and content of the article.

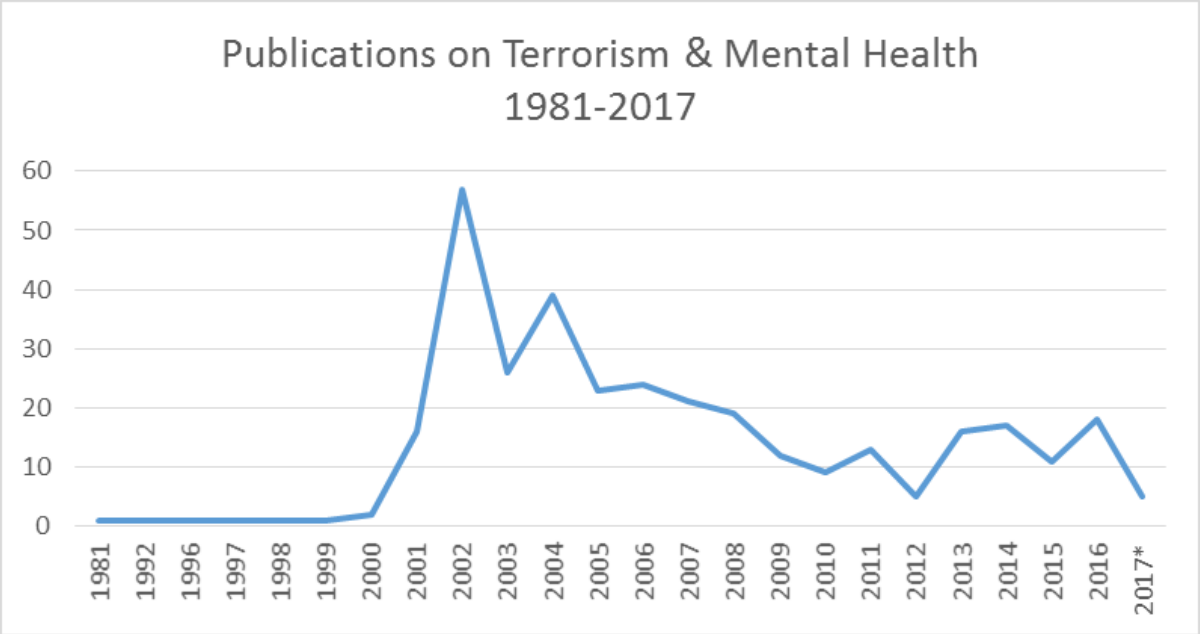
Introduction

From a contemporary perspective, it seems inevitable that the destruction of the Twin Towers at the World Trade Center in New York on 9 September 2001 (9/11), as well as the devastation caused by the plane that crashed into the Pentagon in Washington DC and (surprisingly perhaps, somewhat less so), the failed attack using United Airlines Flight 93 that same morning, would come to be viewed through the prism of their impact – not just political, social and economic – but also on health, at both an individual and collective level.

There were, as we know, almost 3,000 fatalities, as well as over 6,000 injured. The Office of Emergency Management, established to address just such major emergencies, was also directly hit (1). Countless office workers, emergency responders and their families were caught up in the events directly. Many more are held to have been exposed and affected indirectly – primarily through media coverage – right across the United States and beyond.

But what may seem surprising is that academic interest on the relationship between terrorism and health – especially mental health – appears only to have come to the fore at around this time. And that was not driven by the events of 9/11. Rather, this field of interest was gathering momentum just prior to then. For example, a related volume edited by Silke, while only published in 2003, actually started life in 1998 (2 pxix).

While the literature reviewed expanded significantly in 2001, accelerating and peaking in 2002 when 57 articles were found published on related areas, not all pieces from 2001 related to 9/11 as this occurred relatively late in the year. Rather, they referred to earlier incidents, including those in Oklahoma (1995) and Omagh (1998), as well as Israel during and after the first Gulf War (1991). This points to the fact and confirms that this field of research was taking-off then, irrespective of the attacks in New York and Washington.



Accordingly, we need to explain both the apparent lack of interest in mental health effects prior to this period, as well as what the eventual drivers for this new focus were. Our aim is to focus not so much on biological, medical or psychological matters as on the emergence and impact of a new cultural script that highlights our presumed vulnerabilities. We provide a narrative review based on a significant engagement with the literature, rather than a systematic or comprehensive one. We proceed with an historical and contextual overview to outline the position of the dominant literature regarding the association between terrorism and mental health prior to 9/11. We then examine new trends revealed through our sources.

Data overview

When analysed for content, over three-quarters (76.5%) of our core of 217 searchable documents were found to mention PTSD, indeed most actively sought this (though, as discussed further, these were rarely in a position to diagnose it in full). Over a third (36.4%) referred to conducting assessments through telephone surveys, and almost 60% (59.0%) alluded to the role of the media and/or indirect effects of terrorism on mental health. Over half (55.3%) identified children as being of particular concern or touched on the issue of vulnerability (51.6%). And while almost 40% (39.6%) spoke of resilience (compared to 30.4% mentioning anger), in the main this was largely in an assumed way or touched on in a perfunctory fashion. Of course, the literature on resilience may exist primarily beyond the mental health literature, though that too may be worthy of note. Some 71.4% did address the role of families in coping and recovery. This data, matched according to each publication, is also available from the lead author.

Historical context

Attempts to understand the relationship between terrorism and mental health, are recent. In his compilation of psychological perspectives on the matter, Silke noted that '[t]he literature of terrorism is still young: almost all of the books on the topic have been written since 1968' (2 pxvi). As late as 1988, Schmid and Jongman would describe much of this as being 'impressionistic, superficial, and at the same time often also pretentious, venturing far-reaching generalizations on the basis of episodal evidence' (3 p177).

Examining earlier conflicts for evidence relating to terrorism and mental health requires a high degree of circumspection. Aside from debates over the proper meaning of terrorism (a term often used as a pejorative rather than to provide analytical insight), related studies could only emerge with a proper appreciation of the evolving concepts of health, public health and mental health (4-6).

Crenshaw noted that it would be 'difficult to understand terrorism without psychological theory' through which to analyse intentions and emotional reactions (7 p247). Yet, as late as 1991, Merari could find 'no reference to terrorism or to related terms' (8 p91) in the Psychological Abstracts, despite terrorism having become headline news from the 1970s on.

From a sociological perspective, Furedi, proposes that it is not stress, violence or disasters per se that matter, so much as our experience of these within the context of a community response 'more likely to be defined by its vulnerability than its resilience' (9 p482). A shift to a more deterministic and less autonomous outlook may well explain why we conceive of and experience events and adversity differently to people in the past, thereby resulting in quite distinct expectations as well as altering what we investigate and how we interpret outcomes.

The earliest works linking health effects to what we might retrospectively consider to be acts associated with terrorism appear to be those by Murney (1864) and Foy (1886) concerning sectarian riots in Belfast (cited in Lyons) (10 p265). These were primarily 'Statistical' or 'Surgical' reports, and indeed Lyons's own work a century later (as too that of Fraser) (11), focused most on recording physician visits and the use of medication (both held to have declined in the aftermath of these episodes) rather than an analysis of possible pathways to ill-health or attempts to mitigate their effects.

Murney did observe however, that 'the great alarm and anxiety in delicate people produced a loss of sleep, strength and appetite, which, in many cases, terminated in low forms of disease' (10 p265), thereby becoming one of the first to record psychological effects leading to somatic illnesses, as well as how these impacted only particular types of individual. Soon after, Legrand du Saulle (1871), studying the psychological response of Parisians to the exigencies forced upon them through the Franco-Prussian War, also noted how admission rates to asylums declined at such times – an effect further corroborated by Smith (1916) during the First World War in response to aerial bombing (10 p266).

Psychiatric support for soldiers only began in World War One (12,13). Responses focused primarily on what were deemed to have been physical ailments ('palpitation', 'irritable heart', 'battle fatigue', and 'shell-shock'), or alternatively, collective failings ('lack of moral fibre' and 'degeneracy').

Writing in 1942 and commenting on reports from various cities in England at the height of the Second World War, Lewis at the Maudsley Hospital, concluded to the effect 'that a severe neurosis seldom occurs as a war phenomenon in civilians, except in people who had been neurotic before the war' (10 p266). Lyons discusses the particular stressors in Belfast in 1969 (that saw neighbours pitted against one another – unlike a war which might bring people together), and speculates how active engagement might be beneficial. Few children were put forward to his survey, and the three he did see all had a parent who exhibited adverse symptoms, pointing to the possible significance of 'communicated anxiety' (10 p271).

Those critical of Lyons's methods and interpretations, such as Heskin (14), or Cairns and Wilson (15) writing over a decade later, were nevertheless broadly in agreement with his evidence, the latter noting 'that it is unlikely that the political violence caused any marked increase in serious psychiatric illnesses

but rather stimulated an increase in normal anxiety, particularly among the more vulnerable and especially those with a previous history' (15 p193). They further sought however to understand coping mechanisms better. In a similar vein but with respect to withstanding the terror of aerial bombardment during the Second World War, Jones, Woolven, Durodié and Wessely, also concluded that 'civilians proved more resilient than planners had predicted' (16 p463).

Accordingly, by the early 1970s, almost all that might be assumed in the immediate aftermath of 9/11 was already largely known (and much of that had been for quite some time). That is, that most people exposed to traumatic events appeared largely unaffected, and that any distress related symptoms (which could often be physical as well as psychological), soon abated. Indeed, overall numbers seeking support, or falling ill – and even committing suicide (17) – seemed to decline after such events (18). Any with long-lasting psychological injuries were a minority, disproportionately represented by those with a prior history of mental illness, as well as women (assumed to be through their being less involved than men). Robustness was held to derive in part from being actively engaged or ideologically committed (19), and children were seen (if at all) as mostly being affected through their parents and, in the main, not.

With the transformation of the conflict in Northern Ireland through the peace talks that led to the abandonment of the armed struggle, terrorism (in the West) appeared to go into abeyance. Occasional incidents perpetrated by isolated mavericks and splinter groups – such as the Tokyo subway sarin gas attack and the Oklahoma City bombing of 1995, as well as the Omagh car bomb in Northern Ireland in 1998 – served to rekindle interest in the field. The events of 9/11 were then a rude awakening to many, even if there had been evidence of a growing resurgence of attacks for some time, particularly across the Middle East, Africa and Asia.

By now however, a new term had entered the lexicon of the psychiatric profession – posttraumatic stress disorder, or PTSD. Its inclusion in the 3rd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) of the American Psychiatric Association (APA) in 1980, has been hailed as 'a paradigm shift in the conceptualisation of post-trauma illness' (20). It resulted, not from medical advances but primarily from a political process, including demands for greater recognition and remuneration to those American service personnel deemed to have been victims of the war in Vietnam (21,22).

The category was then significantly augmented in scope through revised and subsequent editions (DSM-III-R and DSM-IV), in 1987 and 1994 (23). It represents a change in the priority previously afforded to the role of personal predisposition towards the characteristics of the traumatic event itself having a possibly universal response. This has not been without criticism from those who view it primarily as an invention or social construct (24,25). Regardless, the influence of culture is widely recognised (26), and it was now largely through this, as well as a new, though more limited, focus on resilience that much of the ensuing research came to be interpreted.

Contemporary literature

After 9/11, health effects were sought among every conceivable group and community – those immediately affected, including emergency responders, the families and friends of these, those affected more remotely according to their proximity and mode of exposure, and even journalists and researchers (27), as well as those who simply participated in surveys (28), and the therapists themselves (29). These were further segmented by gender, ethnicity, income and age, and many – both individuals and institutions – projected as having a role in their recovery (30).

Significant sums were provided by the US government (and others) to assess impacts. Inevitably, researchers focused their efforts on the latest concerns. Many insights were gained from this, including about the environmental effects of the smoke and debris, as well as possible mental health consequences (31-33).

However, the latter were investigated, almost invariably, with reference to some aspect of the DSM-IV definition of PTSD.

DSM-IV Criteria for Posttraumatic Stress Disorder (various sources)

A. The person has been exposed to a traumatic event in which both of the following have been present:

1. The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others;
2. The person's response involved intense fear, helplessness, or horror.

B. The traumatic event is persistently re-experienced in one (or more) of the following ways:

1. Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.
2. Recurrent distressing dreams of the event.
3. Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur upon awakening or when intoxicated).
4. Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.
5. Physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma.
2. Efforts to avoid activities, places, or people that arouse recollections of the trauma.
3. Inability to recall an important aspect of the trauma.
4. Markedly diminished interest or participation in significant activities.
5. Feeling of detachment or estrangement from others.
6. Restricted range of affect (e.g., unable to have loving feelings).
7. Sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

1. Difficulty falling or staying asleep.
2. Irritability or outbursts of anger.
3. Difficulty concentrating.
4. Hypervigilance.
5. Exaggerated startle response.

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than one month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

Acute: if duration of symptoms is less than 3 months.
Chronic: if duration of symptoms is 3 months or more.

Specify if:

With Delayed Onset: if onset of symptoms is at least 6 months after the stressor.

Aside from media commentary on events, the first health-related research conducted in the aftermath of 9/11 was that by a team at the RAND Corporation in California, who conducted interviews of 'a nationally representative sample of 560 U.S. adults' from just a few days after the attacks (34 p1507). Their work appeared as a Special Report in the New England Journal of Medicine and – having been first out of the blocks – has been cited over 1,600 times since. It is worth examining this study and its sources as it played a prominent role in accordance, even if aspects of it have subsequently been criticised by others (e.g. 35,36).

Several of the sources in the RAND report refer to PTSD, including one that proposed related symptoms affecting children who witnessed a televised tragedy (the Challenger Space Shuttle disaster) (37). Another investigated the emotional response of parents and children to media coverage of conflict (38). But, apart from these, the team drew on just one previous terrorist incident to inform the core of their work. Unsurprisingly (given its provenance), this was the Oklahoma City bombing of 1995, in relation to which they cite works by North et al. (39) to align symptom selection and Pfefferbaum et al. (40,41) for corroboration regarding the possible role of media coverage at a distance.

Accordingly, in addition to the PTSD framework, the most striking new elements brought into the equation of terrorism and mental health at this time was a discussion of indirect effects presumed to come primarily through the medium of television, and a particular focus on children.

One of the papers by Pfefferbaum and her team held that media exposure was a 'significant predictor' (40 p358) of symptoms, and 'important in the posttraumatic response of youth' (p366), even proposing that viewing and coverage 'be monitored' (p367) both quantitatively and qualitatively. As late as 2014, Holman et al. concurred, going so far as to suggest that 'viewers should be warned' before 'distressing images' (42 p97) are shown, despite recognising that their own work could not 'establish a definitive causal relationship' between exposure and impacts (p96).

Such calls for warnings are not without their critics in other contexts (43). These may serve to protect the privacy of those affected (as well as not promoting the perpetrators or encouraging voyeurism), more than protecting the mental health of viewers as proposed. Excessive viewing may best be avoided – the routine advice now given to parents at such times – but so too should censorship, especially as the latter might preclude the development of a more positive sense of indignation and resistance.

Nevertheless, another of the works cited by Schuster et al. (34), was similarly forthright in asserting 'an overwhelming consensus in the scientific literature about the unhealthy effects of media violence' (44 p30), putting any difference of opinion down to 'the limitations of the public's current understanding' (p33) and proposing education as a remedy. It is beyond the scope of this review to examine the literature and debate over media effects theories save to suggest that to assess the consequences of television viewing as being entirely unmediated is to ignore a multitude of other social, cultural and contextual variables, as well as presuming the media to pose a unique threat and positing a low view of the public's ability to be critical (45-48).

Notably, in the period after 9/11, Pfefferbaum modified her view (49), emphasising the need to be circumspect about statistical associations, and recognising it as doubtful that media coverage alone could 'qualify as a stressor for the purpose of a PTSD diagnosis' (50). Indeed, others noted how watching the news might be an attempt to cope or assuage distress by being connected and searching for an explanation to events (51 p859).

More recently, Wessely, Rubin and Greenberg (52) reiterated that – aside from the practical difficulties of restricting coverage – '[c]orrelation … does not equal causation'. In relation to children, while not being able to 'pretend that nothing has happened', they averred parents ought still to suggest when 'enough is enough' in terms of viewing. The latter though, points to cultural challenges regarding parental authority today (53), rather than medical effects – deemed inevitable – of watching disturbing footage or images.

But the assumption of a connection between 'televised trauma' and 'emotional well-being' continues to be made, with the RAND study and Pfefferbaum's earlier work on the Oklahoma bombing often used by way of presumed evidence (42, 54-57). Some even seemed concerned to note that, with the publication of DSM-5 in 2013 'media exposure no longer meets stressor criterion A for a traumatic event' (57 p266). While conceding that their own data 'rendered it impossible to evaluate' any such link, they concluded that 'nevertheless' it still illustrated 'excessive demand' and 'further emphasize[d] the magnitude of the … problem' (p272).

Accordingly, one area for future research will be to address not so much the health effects of exposure to the media as what it is about contemporary culture that is revealed through the media, as well as concerns regarding its presumed effects. Researchers ought to be particularly careful not to conflate measuring incidence – of exposure or symptoms – with explaining provenance. For instance, one research team found that although psychiatric referrals went up in the aftermath of 9/11, these were not induced by events but rather reflected 'the increased presence of public and private security personnel and reduced community tolerance for deviance' in relation to those with existing mental illnesses (35 p166).

Methods and definitions

In the research on the mental health effects of 9/11, data were often gathered through telephone surveys (over a third of our fairly comprehensive sample mention these). These were typically administered by volunteers with just a few hours training (stretching to two days on occasion) (58-60), and lasted between 15 to 45 minutes. Such techniques are screening tools rather than allowing definitive estimates of prevalence.

While noting the benefits of obtaining 'data quickly', one team, writing after the London attacks in 2007 nevertheless noted how, 'the social and political context in which a questionnaire is administered can drastically alter the perceived meaning of the individual questions contained within it' (61 pS31). A US study, published soon after 9/11, noted how 'the use of screening measures rather than comprehensive clinical assessments … increases the likelihood of misclassification' (62 p588).

And, as different research teams applied distinct symptom checklists in their surveys – rarely using structured diagnostic interviews – the results and conclusions from these were 'virtually impossible to compare' (49 p634). In their work covering the Oklahoma bombing, Hoven et al. had similarly lamented differences in 'study methodologies' and 'exposure criteria', in addition to unstated 'operational differences' and the pursuit of 'different types of comparisons' (54 p105).

More significantly though, much of the literature we examined refers to assessing PTSD (cited in over three-quarters of our core literature), while describing what was actually recorded variously as 'pre-PTSD', 'partial PTSD', 'sub-threshold PTSD', 'spectrum PTSD', 'likely PTSD', 'PTSD reactions', or just 'PTSD related symptoms', amongst many others. We suggest that labelling any recognised symptom (such as 'trouble falling asleep') in this way (alone, or in combination), may serve to confuse and confound, as well as to inflate concerns, rather than clarifying matters.

It is akin to labelling nausea and vomiting – which are possible symptoms of bubonic plague – as bubonic plague symptoms (or BPS). That these may coexist with fever and chills – also BPS – does not make this any more significant than otherwise. The move from specific symptom to generalised label is unwarranted.

Numerous metrics were used – most relying on an incomplete set of criteria B, C and D (63). Criterion A – that requires a life-threatening experience and an intense response – described by McGarvey and Collins (64) 'as the 'gatekeeper' to the diagnosis of PTSD', was often absent from these articles (most evidently those – amounting to almost 60% – that sought media or indirect effects). In a different context, Coyne had previously noted how the Posttraumatic Stress Diagnostic Scale (PSDS) can 'overestimate both the number of clinical diagnoses of depression and PTSD' (65).

What is interesting from a cultural perspective is the tendency to adapt and circumscribe the definitions of the APA, or make these more accessible and achieveable to the researchers using them. The elasticity of what is itself a loosely-defined category ought not to surprise scholars of the social sciences. The American scholar, Joel Best, has noted how 'once a problem gains widespread recognition and acceptance, there is a tendency … to expand the problem's domain' (66 p168). This process is driven by social, rather than medical, forces and can have a determining effect on how we view the available evidence, as well as what we consider to be evidence in the first place, including how we go about looking for and measuring it.

As PTSD cannot be diagnosed remotely, nor within the first month after any incident, so this precluded its identification in many of these studies. The events associated with a diagnosis of PTSD should ideally 'be securely in the past' (65) so that any ongoing hypervigilance, flashbacks, nightmares and avoidance be clearly incongruent (such as veterans fearing Asians or reacting to the word 'jungle'). Accordingly, aside from the expansive use of this category, others sought different, if related, ailments such as Acute Stress Disorder (ASD) – a category first introduced into DSM-IV in 1994 and held to be akin to Combat Stress Reaction (CSR).

North notes that, '[t]he diagnosis of Acute Stress Disorder was developed to permit diagnosis during the first month before PTSD may be invoked, but the validity of this diagnosis is not established' (67 p32). Nevertheless, the assessment of ASD in various studies, as well as its own domain expansion through terms such as 'acute stress symptoms' (42), allowed, in some instances, a circular argument to emerge whereby 'extreme stress' was held to precipitate physiological ailments that, together with the presumed psychological effects encountered were held to act in combination as 'risk factors for subsequent development of posttraumatic stress disorder', (68 p73).

Eliding the full DSM criteria and combining response categories can give the impression of more noticeable effects than may truly have ensued. For instance, Schuster et al. defined being 'bothered' to any extent above average by 9/11 as 'substantial stress' (34 p1508). And, in relation to the mass shootings undertaken by Anders Breivik in Norway – horrific by any definition of the word – Aakvaag et al. nevertheless merged the responses from 'sometimes' or 'more' with 'often' and 'almost always' to compensate for 'the low number of respondents reporting' particular emotions (69 p619). Similarly, Adams et al. were not alone when driven to audit what they defined as 'subsyndromal or partial-PTSD' due to the 'relatively few respondents who met the full DSM-IV criteria' (70 p207).

The latter were still surprised by their data, which showed '[o]ne of the unexpected findings was that increases in alcohol use seem related to better physical health' (p219). These and other researchers appeared not to see benefits when confronted by outcomes that failed to conform to expected cultural norms. Polatin et al. went as far as citing media-induced PTSD from the RAND study (55 p311) when the latter made no mention of PTSD in its narrative – nor could it, having been pursued from just a few days after the events. There are plenty of other examples of evidence that ran against expectations or the, by then, dominant narrative of trauma and the concomitant need for professional support being overlooked.

So, despite efforts to discern it, there was no increase in the usage of clinics or medication in the aftermath of 9/11 (71-73), even among veterans who might have been presumed more susceptible (74). And, even if there had been, North reminds us of the need to distinguish use from abuse, dependence and disorder. 'It does not benefit people without psychiatric illnesses to have their distress pathologised with incorrect diagnostic labels, because distress not reaching the level of a psychiatric disorder requires interventions different from those appropriate for psychiatric illness', she added (75 p243).

Likewise, data that pointed to pre-existing challenges and frustrations remaining more likely correlates of stress (such as low income or having children) in this and other situations was largely elided (76-78). That women continue to be the group most susceptible to stress continued to be noted but left with little explanation (79,80), though Norris et al. in their comprehensive meta-analysis of the then existing studies

put this down to their 'subjective interpretation of events rather than … objective exposure to disaster stressors' (81 p229), which counters PTSD.

In the face of consistent evidence that most affected in this instance and others did not seek support (78, 82-85) – some even regarding 'their distress as a "normal" reaction to these unprecedented events that was shared with their neighbors and communities rather than as a disorder needing care', (36 p1381) – still the conclusion was that health professionals had to reach out more to the public as referrals and self-referrals were deemed insufficient (86-88).

Of course, active follow-up is now recommended precisely to avoid any 'rush to counsel' that 'may have unintended and negative effects' (89) (including the side-lining of psychiatry (90)). But, under the circumstances, it would seem that no matter what the evidence showed, it was not possible to preclude culturally determined speculation about its significance, as well as demands for more intervention. While concern and empathy is understandable for those caught up in these and similar incidents, researchers ought to ward against outright advocacy.

Once the dust settled, most would recognise projected PTSD rates as high as 90% or more (54,91-93), (even if obtained in different contexts) as dubious, though the latter was still being cited, including in relation to terrorist attacks, long after 9/11 (29,94,95). The considered view is that most responses remained within the normal (1-5%) range for civilian PTSD. Single symptoms of stress might reach 30-40% in the immediate aftermath but abated soon after (96). Referring to those beyond immediately affected areas, North and Pfefferbaum suggested that 'symptoms and reactions to the September 11 attacks deserve recognition as psychological sequelae, but these responses are distinct from PTSD' (49 p635).

Only a few noted how solely focusing on PTSD or ASD might have underplayed or ignored other, important effects, including physical ailments, depression and behaviour modification (such as most – though not all – of the authors in a recent compilation devoted to this) (97). For instance, Webber et al. (98) assessed that 54.2% of the New York firefighters they surveyed reported frequent coughing in the year after 9/11. This declined to 15.7% three years later, but had to be compared to just 4.1% previously (p976). To such effects we should add consequences that were only indirectly related to health, such as loss of property and income, as well as, as noted above, the continuation of pre-existing social challenges and 'macro-level social stressors' (99).

Clearly, there are methodological and conceptual difficulties in applying the category of PTSD to the emotional and psychological responses to terrorism, particularly for those not directly involved in a terrorist incident. So how and why did this become the diagnostic of choice, or 'the most commonly researched phenomenon' (29 p.214), for those exploring the relationship between terrorism and mental health?

The pathologisation of emotions and the search for PTSD

The extent to which our cultural script regarding the expression of emotions and pathologies in public, as well as how their analysis and acceptance have been transformed over recent years is widely recognised (100-102). There was a tremendous surge of interest in emotional and psychological trauma from the late 1980s. This accelerated through the process of the erosion of the old, Cold War certainties with their associated ideologies and identities that impacted individuals from the end of 1989 (103).

McLaughlin notes how '[t]he concept of trauma no longer refers to extreme experiences but has become normalised' (104 p129). West, charts the rise of the empathy ribbon with this – the first being the red one for AIDS introduced in 1991 – worn ostensibly to 'raise awareness' of particular ills, but equally, in his view, as a form of virtue signalling (101 p23). And, despite no necessary connection to those who suffer loss in tragic circumstances, many are now drawn to expressing their sorrows and solidarity more openly than in the past, occasionally through somewhat superficial and potentially self-serving, new rituals (105).

Self-restraint has increasingly been derided by some commentators and academics as old-fashioned and lacking in emotion, suggesting that, for these at least, only certain emotions are deemed acceptable. Yet, as Pfefferbaum and her colleagues note in an insightful, if insufficiently dwelt upon, passage from their paper published after the Oklahoma bomb, '[o]verreporting of interpersonal exposure may represent a desire to belong to a greater community experience' (41 p367). This could point to aspects of why social media reports after terrorist (and other traumatic) incidents now also appear replete with inaccuracies, exaggerations and falsehoods. At the same time, anger (referred to in almost a third of our core literature) is described as a 'negative' feeling in the PTSD checklist (PCL) (106). Yet, when productively channelled, it may prompt positive action in response to events (107).

The pathologisation of emotions is now widespread in the literature, often overlooking the social and cultural causes and consequences of this. The Economist (108), reported that 11% of American school-age children are now diagnosed as having attention-deficit/hyperactivity disorder (ADHD) – a clinical category possibly driven by a crisis of adult authority rather than needing to be medicalised (109). The use of the ADHD category has a strong cultural association. Indeed, reporting on a study in the journal Pediatrics about the relationship between watching television as a toddler and subsequently developing ADHD, Guldberg points to how '[t]his 'evidence' has been reported uncritically by a growing army of researchers, commentators, writers and policymakers', despite its many methodological flaws which, notably, did not include any child 'formally diagnosed with ADHD' (110 p121).

Few were 'formally diagnosed' with PTSD in our survey of the literature. The advent of PTSD certainly allowed acceptance that continued suffering was not abnormal or shaped by moral failings, such as cowardice (111), repressed trauma or genetic predisposition. But we question whether using labels such as 'pre-PTSD' or 'PTSD symptoms' are helpful in this regards. Irrespective, the particular definition of PTSD in DSM-IV clearly had a tremendous influence over research agendas, as well as shaping projections and funding – before 9/11, as well as after.

Wessely describes DSM classifications as a map 'ready to be changed as the landscape changes' (112). But while it is true, as he suggests, that psychiatrists ought to study 'the whole person' in relation to society (99), there is little evidence in the literature examined that broader social and cultural factors were taken much into consideration, especially when working through truncated versions of a 17-point questionnaire with individuals over the phone. And, as Wessely noted with his collaborators elsewhere 'merely documenting transient increases of a large range of conventional psychiatric diagnoses in the immediate aftermath of an incident may not be particularly helpful' (61 pS30).

In his book 'Shyness: How Normal Behavior Became a Sickness', the historian Christopher Lane mapped out the consequences of these trends – a vast increase in people diagnosed with 'social phobia' or 'avoidant personality disorder' together with their treatment or medicalisation. Confirming Furedi's analysis of how we increasingly view events through a prism of vulnerability, he also identified how 'the normal emotional range of adolescence and adulthood – have become problems we fear and expect drugs to fix' (113 p8). Above all he argues, by eroding the distinction between normal emotional responses – including grief and anxiety – with severe disorders, it is those who are genuinely suffering who lose the most.

Cultural variations, children and community resilience

A cultural shift in expectations of resilience has also accompanied the advent of PTSD. While almost 40% of the literature we reviewed mentioned resilience in some way, this was almost invariably used in a perfunctory manner – a quality assumed rather than investigated. One striking contrast in our literature came from researchers based in Israel (114-119), who actively sought coping mechanisms and even 'posttraumatic growth' (PTG) – a concept also advanced elsewhere (120) – rather than solely assessing enduring stress disorders.

In this vein, Possick et al. note a (welcome) tension between authorities offering psychotherapy and families who rejected this (118 p492). They propose that Western societies, within which most of these

therapeutic approaches arose and became prevalent, are too fixated on the self and identity, at the cost of a social understanding of 'the relational self' that emerges and develops in a broader context (p495).

The situation in Israel of course, is very different. Citizens have had to habituate to years of terrorist related incidents rather than single attacks. And while the numbers affected in Israel are considerably less than those affected by 9/11, given the much smaller population there it represents a significantly larger percentage (121).

In a fascinating piece, Friedman-Peleg and Goodman interrogate what they see as 'two paradoxes' of psychologically focused approaches (78). First, that these commend the people's spirit in the face of adversity while simultaneously insisting, that they need help. And second, that while claiming to support the community, these necessarily target individuals. They also identify 'a new social expansion of PTSD' (p423), which they see shifting from clinical to preclinical assessment to anticipate future symptoms, and note how 'PTSD has become an important instrument for gaining recognition' (p424), leading to other ailments and broader socio-political drivers becoming marginalised. They point to how the language of psychological trauma and even 'the new resilience program offered … by the PTSD professionals' have simply become the latest vehicle to allow intervention into the lives of particular communities, particularly those deemed 'disadvantaged' (p426).

Their focus on family and community leads them to quite different conclusions from those who appear simply to assume or accept that children are particularly susceptible to psychological trauma (122-124). 9/11 was 'physically and emotionally devastating to children' (p77) exclaimed one (125). But, as others note, even if there is '[a]bundant evidence' to document 'the adverse mental health consequences' of trauma on youth, the literature on the benefits of 'psychosocial treatments … is very limited' (126 p350).

The evidence presented in this review suggests that many studies on stress symptomology, media effects and consequences for children are simply taken at face value. In fact, with possibly one limited exception (127), 'systematic assessment, using diagnostic-based measures in well-designed, longitudinal investigations of representative samples of children (in sufficient numbers) to allow for meaningful analyses' simply do not exist (128 p218). Rather, different studies examined different children at different developmental stages in different contexts at different times using different methodologies to assess the different effects of different exposures on different factors – thereby precluding any generalizable findings.

And again, PTSD remained the most explored outcome, despite its probable inappropriateness for children in these contexts. Likewise, few explored 'the possible effects of familial exposure on children' (128 p228), despite this being recognised as particularly relevant for children who tend to mirror their parents' distress (81,129,130). '[P]arents' encouragement of positive reframing' of events was 'associated with lower distress levels' among adolescents, whereas recommending these 'seek help and advice from others' was linked to greater stress (130).

The role of the family, rather than of professionals, in post-conflict healing has been noted elsewhere (131,132). Stuber et al. specifically found that '[p]arents' own level of posttraumatic stress was associated with whether their children received counselling related to the September 11 attacks' (76 p815), suggesting that there is a considerable degree of projection that occurs in such instances, a result also found in an Irish context (133). 'Calm and functional parents … can be reassuring to children' note Pine et al. (134 p1786).

Traditions and rituals (135), as well as 'stories about one's grandparents or great-grandparents' are also important (136), the authors of the latter going so far as to suggest that 'knowing any story, even if it contained themes of vulnerability, was more protective than knowing no story at all' (p197). As another Israeli scholar noted, 'it takes more than the agent (e.g., threat to life) to provoke psychopathology' (137 p36). Sadly, it would seem, analyses informed by an appreciation of social and cultural change have come to be replaced by a narrow empiricism promoting biological or technological vulnerability and concomitant 'long-term damage to the community' (9 p482).

Conclusion

Our analysis of the evidence relating to the putative relationship between terrorism and mental health problems, particularly among those not directly involved in an incident, suggests that the phenomenon has more to do with diminished expectations relating to human vulnerability and the rise of a therapy culture (103), than it has to do with the objective impact of exposure to stressors. PTSD researchers have played a key role in promoting the possibility of widespread psychopathology among populations exposed to terrorism through the media, even if their efforts in searching for this pathology have thus far yielded little in the way of valid and reliable evidence.

This is not to suggest that the widespread emotional response to terrorist incidents is insignificant or should be ignored, although whether the new traditions of vigils and peace rallies truly help to build resilient communities remains to be discovered. These are certainly unable to explain or address the phenomenon of terrorism itself. For those directly involved in incidents a strategy of watchful waiting allows most to recover making use of their own networks, while a 'screen and treat' programme a few weeks later, can direct professional intervention to those with ongoing psychological problems. But these remain a minority.

As referred to previously, '[o]verreporting … may represent a desire to belong' – a social and cultural driver rather than a medical one (41 p367). Indeed, as early as 1984, the American historian, Christopher Lasch had pointed to the emergence of a 'survival mentality' in society, whereby 'everyday life has begun to pattern itself on the survival strategies forced on those exposed to extreme adversity', thereby leading to 'the normalization of crisis' (139 p57,60). While critical of this, Corrado noted how Lasch's earlier work on narcissism suggested the pathological characteristics of this as being difficult to discern 'because many of the characteristics of this disorder are culturally valued' (140 p299).

In relation to Vietnam veterans, whose experiences helped to define PTSD, one writer was left wondering 'how much we are dealing with the sequelae of post-combat belief, expectation, explanation and attribution rather than the sequelae of combat itself' (138 p73). An unremitting focus on PTSD in the ensuing period, then shaped much of the research conducted after 9/11, as well as the interpretation of its findings. As we have seen, other drivers, consequences and explanatory models were overlooked in consequence.

And, just as traumatic stress was deemed the primary concern, so too were other assumptions turned into axioms – the role of media exposure at a distance and the assumed effects on youths presumed to be particularly vulnerable. As children do need protection the focus on these has served as the first step in the pathologisation of such incidents. Few would propose related interventions to be overly paternalistic yet, once established there they may come to serve as a template for a concomitant infantilisation of adults through similar means.

At the same time however, while governments make historical references and issue messages that seek to promote a sense of resilience, our review suggests that presumptions about the power of such narratives (as too that of the media) may be overstated – after all, one of the more dominant, promoted by politicians, analysts and commentators alike, has been the assumption that terrorist acts will impact our mental well-being and sense of security.

Given the significant role attributed to social constructs and narratives in contemporary society it may seem odd that these appear to have been of so little consequence here. That terrorism isn't terrorising – beyond the PTSD levels expected in any other emergency – ought to be cause for celebration, as well as further inquiry. Authorities may prefer to encourage an analysis of terrorist incidents that highlights such fortitude and courage over presumed psychological vulnerabilities.

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